Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A thermionic emission device, comprising:

a substrate having a cavity extending into a surface of the substrate;

a cathode having an electron-emitting coating disposed thereon, the cathode suspended near the cavity in the substrate;

an anode constructed of an electrically conductive material, wherein the anode is configured to receive electrons emitted by the cathode,;

an elongated grid supported by at least one elongated wall-shaped support extending perpendicularly from the substrate, the wall-shaped support configured to be free standing and not supporting the anode, the elongated grid forming at least one aperture configured for allowing the passage of electrons therethrough and wherein the elongated grid is positioned between the cathode and the anode, but not directly in a path for electrons to travel from the cathode to the anode;

a seal for creating a controlled environment in an area surrounding the anode, the cathode, and the elongated grid; and

a circuit configured for heating the cathode.

2. (Previously Amended) The device of claim 1 further comprising, at least one control circuit for selectively supplying a voltage to the grid to control the magnitude of the flow of electrons through the at least one aperture of the grid, thereby controlling the electrical current received by the anode.

3. (Previously Amended) The device of claim 1, wherein the grid further comprises a plurality of elongated conductive strips, wherein the plurality of elongated conductive strips are substantially parallel to one another, and wherein the at least one aperture of the grid is formed by the spacing between the plurality of elongated conductive strips.

4. (Previously Canceled)

5. (Previously Amended) The device of claim 1, wherein the at least one elongated support comprises a stacked structure.

6. (Previously Amended) The device of claim 1, wherein the cathode is affixed to the substrate at opposite ends of the cathode, and wherein a substantial portion of the cathode is suspended over the cavity of the substrate, thereby forming a gap between the cathode and substrate.

7. (Original) The device of claim 1, wherein the electron emitting coating is made of a low work function material.

8. (Original) The device of claim 1, wherein the electron emitting coating is made of a BaSrCa tricarbonate.

9. (Original) The device of claim 1, wherein the electron emitting coating includes BaSr.

10. (Original) The device of claim 1, wherein the electron emitting coating includes BaSrAl.

11. (Previously Amended) The device of claim 1, wherein the electron emitting coating includes thoriated tungsten.

12. (Original) The device of claim 1, wherein the electron emitting coating includes scandia.

13. (Original) The device of claim 1, wherein the electron emitting coating includes scandate.

14. (Original) The device of claim 1, wherein the electron emitting coating includes cesium.

15. (Original) The device of claim 1, wherein the grid is made of material selected from the group consisting of tungsten, gold, nickel, carbon, silver, and copper.

16. (Original) The device of claim 1, wherein the grid is made of material selected from the group consisting of molybdenum and tantalum.

17. (Original) The device of claim 1, wherein the grid contains a carbon-containing material.

18. (Original) The device of claim 1, wherein the grid contains a silicide.

19. (Original) The device of claim 1, wherein the controlled environment surrounding the grid, cathode, and anode has a vacuum drawn therein.

20. (Original) The device of claim 1, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, krypton, argon, and mercury.

21. (Currently Amended) A thermionic emission device, comprising:
a substrate having a cavity extending into a surface of the substrate;
a first member having an electron-emitting coating, wherein the first member is suspended near the cavity;
a second member constructed of an electrically conductive material configured to receive electrons emitted by the first member and configured to produce an electrical current for an external circuit from the received electrons;
a first elongated grid supported by at least one elongated wall-shaped support extending perpendicularly from the substrate, the wall-shaped support configured to be free standing and not supporting the second member, the first elongated grid forming a first at least one aperture configured for allowing passage of electrons therethrough;
a second elongated grid supported above the first elongated grid and forming a second at least one aperture configured for allowing the passage of electrons therethrough wherein the first elongated grid and the second elongated grid are positioned between the first member and the second member, but not directly in a path for electrons to travel from the first member to the second member;
a seal for creating a controlled environment in an area surrounding the first and second elongated grids and the first and second members; and
a circuit configured for heating the first member.

22. (Currently Amended) The device of claim 21, further comprising, at least one control circuit for selectively supplying a voltage to the first and second elongated grids to control the magnitude of the flow of electrons through the first and second at least one apertures of the first and second elongated grids, thereby controlling the electrical current received by the second member.

23. (Previously Amended) The device of claim 21, wherein the first and second at least one apertures are aligned.

24. (Currently Amended) The device of claim 21, wherein the second elongated grid is electrically connected to a ground source.

25. (Currently Amended) The device of claim 21, wherein the first and second elongated grids each further comprise elongated conductive strips mounted on the at least one elongated support extending perpendicularly from the substrate.

26. (Previously Amended) The device of claim 21, wherein the first member is affixed to the substrate at opposite ends of the first member, and wherein a substantial portion of the first member is suspended over the cavity of the substrate, thereby forming a gap between the first member and substrate.

27. (Currently Amended) The device of claim 21, wherein the first and second elongated grids are made of material selected from the group consisting of tungsten, gold, and tantalum.

28. (Currently Amended) The device of claim 21, wherein the controlled environment is an enclosed area surrounding the first and second elongated grids, the cathode, and the anode, wherein the enclosed area has a vacuum drawn therein.

29. (Original) The device of claim 21, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, argon, and mercury.

30. (Currently Amended) A thermionic emission device, comprising:

a substrate having a cavity extending into a surface of the substrate;

a first member having an electron-emitting coating, wherein the first member is suspended near the cavity;

a second member comprising an electrically conductive material and configured to receive electrons emitted by the first member;

a first elongated grid forming a first aperture configured for allowing passage of electrons therethrough~~,~~;

a second elongated grid forming a second aperture configured for allowing the passage of electrons therethrough~~,~~;

a third elongated grid forming a third aperture configured for allowing the passage of electrons therethrough, wherein the first, second and third elongated grids are positioned between the first member and the second member, but not directly in a path for electrons to travel from the first member to the second member;

wherein the first, second and third elongated grids are supported by at least one elongated wall-shaped support extending perpendicularly from the substrate that is configured to be free standing and not supporting the second member,

a seal for creating a controlled environment in an area surrounding the first, second, and third grid, and the first and second member; and

a circuit configured for heating the first member.

31. (Currently Amended) The device of claim 30, further comprising, at least one control circuit for selectively supplying a voltage to the first, second and third elongated grids to control the magnitude of the flow of electrons through the first, second and third apertures, thereby controlling the electrical current received by the second member.

32. (Currently Amended) The device of claim 30, wherein the first, second and third apertures are aligned.

33. (Currently Amended) The device of claim 30, wherein the second elongated grid is electrically connected to a ground source.

34. (Currently Amended) The device of claim 30, wherein the first, second and third elongated grids each comprise elongated conductive strips mounted on the at least one elongated support extending perpendicularly from the substrate.

35. (Previously Amended) The device of claim 30, wherein the first member is affixed to the substrate at opposite ends of the first member, and wherein a substantial portion of the first member is suspended over the cavity of the substrate, thereby forming a gap between the first member and substrate.

36. (Currently Amended) The device of claim 30, wherein the first, second and third elongated grids comprise at least one of tungsten, gold, nickel, molybdenum, platinum, titanium and tantalum.

37. (Currently Amended) The device of claim 30, wherein the controlled environment is an enclosed area surrounding the first, second and third elongated grids, the cathode, and the anode, wherein the enclosed area has a vacuum drawn therein.

38. (Original) The device of claim 30, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, argon, and mercury.

39. (Currently Canceled)

40. (Currently Canceled)

41. (Currently Canceled)

42. (Previously Canceled)

43. (Previously Canceled)

44. (Currently Amended) A thermionic emission device, comprising:
a substrate means having a cavity that extends into the substrate;
a cathode means having an electron-emitting coating disposed thereon, wherein the cathode means is suspended near the opening of the cavity in the substrate means;
an anode means constructed of an electrically conductive material, wherein the anode means is configured to receive electrons emitted by the cathode means;
a grid means supported on at least one elongated wall-shaped support extending perpendicularly from the substrate means, the wall-shaped support configured to be free standing and not supporting the anode means, the grid means forming at least one aperture configured for allowing passage of electrons therethrough, and wherein the grid means is positioned between the anode means and the cathode means, but not directly in a path for electrons to travel from the cathode means to the anode;
a seal for creating a controlled environment in an area surrounding the anode means, the cathode means, and the grid means; and
a circuit configured for heating the cathode means.

45. (Previously Amended) The device of claim 44, further comprising, at least one control circuit for selectively supplying a voltage to the grid means to control the magnitude of flow of electrons through the at least one aperture of the grid means, thereby controlling the electrical current received by the anode means.